ABSTRACT OF THE INVENTION

The present invention relates to a stem cell expansion factor, and to a method for enhancing hematopoietic stem cell expansion by direct delivery of a protein in the cell and which protein is able to cross cell membrane. The method comprises directly delivering in a HSC an amino acid sequence having the activity of a peptide encoded by a Hoxb4 nucleotide sequence. Once delivered, the amino acid sequence is functionally active in the hematopoietic stem cell and enhances expansion thereof. The amino acid sequence may consist of a HOXB4 protein.